

JPRS 72146

30 October 1978

**CHINA**

PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS  
No. 202

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<b>BIBLIOGRAPHIC DATA SHEET</b>		1. Report No. JPRS 72146	2.	3. Recipient's Accession No.	
4. Title and Subtitle PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS, No. 202				5. Report Date 30 October 1978	
				6.	
7. Author(s)				8. Performing Organization Rept. No.	
9. Performing Organization Name and Address Joint Publications Research Service 1000 North Glebe Road Arlington, Virginia 22201				10. Project/Task/Work Unit No.	
				11. Contract/Grant No.	
12. Sponsoring Organization Name and Address  As above				13. Type of Report & Period Covered	
				14.	
15. Supplementary Notes					
16. Abstracts  The serial report contains abstracts in scientific disciplines regarding China.					
17. Key Words and Document Analysis. 17a. Descriptors					
China					
<input checked="" type="checkbox"/> Agricultural Science and Technology		<input checked="" type="checkbox"/> Engineering and Equipment			
<input checked="" type="checkbox"/> Bio-Medical Sciences		<input type="checkbox"/> Electronics and Electrical Engineering			
<input type="checkbox"/> Chemistry		<input checked="" type="checkbox"/> General Sciences			
<input type="checkbox"/> Cybernetics, Computers, and Automation Technology		<input type="checkbox"/> Materials Science and Metallurgy			
<input checked="" type="checkbox"/> Earth Sciences		<input checked="" type="checkbox"/> Physics and Mathematics			
17b. Identifiers/Open-Ended Terms					
17c. COSATI Field/Group 01, 02, 04, 06, 07, 08, 09, 11, 12, 13, 20					
18. Availability Statement Unlimited availability. Sold by NTIS Springfield, Va. 22151				19. Security Class (This Report) UNCLASSIFIED	
				20. Security Class (This Page) UNCLASSIFIED	
				21. No. of Pages 61	
				22. Price	

30 October 1978

## PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS

No. 202

This serial publication contains abstracts of articles published in selected scientific and technical journals. JPRS is unable to honor requests for original source materials or information as to the availability of full translations of these articles.

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ACTA ENTOMOLOGICA SINICA

AUTHOR: WU Chung-lin [0702 0022 2651]

ORG: Wu-hsien Institute of Agricultural Research, Kiangsu Province

TITLE: "Relationships Between the Change of Rice Cropping Systems and the Pest Status of Rice Stem Borers"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAD [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 233-242

TEXT OF ENGLISH ABSTRACT: The change of rice cropping systems alters the environmental conditions essential to the multiplication and survival of rice stem borers, resulting in a conspicuous difference in the annual number of generations, the temporal position of the population peaks and the degree of infestation. The development of the original single late rice cropping to double and triple cropping from partiality to totality in the region caused a corresponding change of the pest status from light to severe and then from severe to light. Evidently the degree of borer infestation is closely related to the numerical changes of the populations and the coincidence of the vulnerable developmental stages of rice plants and the appearance of newly hatched larvae. Our field experience in the

[continuation of K'UN-CH'UNG HSUEH-PAD No 3, Aug 78 pp 233-242]

past few years has shown that suppression of borer populations to a low level can be achieved by adopting rational cropping systems, increasing the uniformity of the rice varieties planted in one region, improving field management by proper watering and manuring to promote healthy and uniform vegetative growth and applying insecticides in a restricted manner when necessary.

\* Thanks to MA Shih-chun [7456 0013 7486] of the Zoology Institute, Chinese Academy of Sciences.

AUTHOR: TING Yen-ch'in [0002 1484 2953]  
LI Tien-mo [2621 0368 6206]  
CH'EN Yu-p'ing [7115 3768 1627]

ORG: All of the Zoology Institute, Chinese Academy of Sciences

TITLE: "Studies on the Patterns of Distribution of the Oriental Migratory Locust and Its Practical Significance"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 243-259

TEXT OF ENGLISH ABSTRACT: This paper deals with the patterns of distribution in different developmental stages of the oriental migratory locust, Locusta migratoria manilensis Meyen, in its breeding areas. It was found that the adults, the eggs and the nymphs in low population densities essentially are in agreement with the random distributions of Poisson series, but as the densities increase the distribution patterns then become non-random and can be represented by negative binomial series. Based on the patterns of locust distribution, a suitable sampling technique for pest status monitoring has been proposed.

AUTHOR: None

ORG: Division of Biological Control, Kwangtung Entomological Institute Experimental Station, Sha-t'ien Orchard, Canton

TITLE: "Studies on the Integrated Control of the Citrus Red Mite with the Predaceous Mite as a Principal Controlling Agent"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 260-270

EXCERPT FROM ENGLISH ABSTRACT: In the citrus orchards in Canton suburbs the predaceous mites, chrysops, mite-eating ladybird, certain species of thrips and spiders, have been found to be the natural enemies of the citrus red mite Panonychus citri (McG.), among which Amblyseius newsami (Evens) is a dominant species and always outnumbers the others from 1.5 to 1 up to 4 to 1.

Promising results have been obtained from the experiments of integrated control in 1975-76 by the utilization of the A. newsami as a principal controlling agent supplemented with the application of a small quantity of selective chemical insecticides and the implementation of agricultural techniques.

[continuation of K'UN-CH'UNG HSUEH-PAO No 3, Aug 78 pp 260-270]

\* Specimens were identified by LIAO Ting-hsi [1675 1353 3588], P'ANG Hsiung-fei [1690 7160 7378], YANG Chi-k'un [2799 7162 2492], SUNG Ta-hsiang [1345 1129 4382], CHANG Wei-ch'iu [1728 4850 3808] and WANG Hui-fu [3769 1979 5346]. P'U Che-lung [5543 5832 7893] reviewed the manuscript.

AUTHOR: CHAO Ching-chao [6392 2417 6856]  
CHANG Hsuan-ta [1728 1357 6671]

ORG: Both of the Laboratory of Pest Natural Enemies, Department of Biology, Wuhan Teachers College

TITLE: "Population Fluctuations of Green Lace Wings in Cotton Fields"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 271-278

EXCERPT FROM ENGLISH ABSTRACT: It is well known that green lace wings are important natural enemies of many insect pests infesting cotton. In the past three years we have carried out regular investigations on 43 plots of selected cotton fields in the following counties of Hupeh province, namely Han-yang, T'ien-men, Kuang-chi, Hsiang-yang and the vicinity of Wuhan, in order to clarify the characteristics of the population fluctuations of green lace wings therein.

AUTHOR: HU Ho-ling [5170 7729 7881]  
CHANG Shih-min [1728 2514 2404]  
YANG Chin-k'uan [2799 6855 1401]  
CH'EN Yu-po [7115 3768 3134]  
SHAO Kuei-ying [6730 2710 5391]  
WANG Feng-yao [3769 7364 1031]

ORG: HU of the Chekiang Institute of Forestry; CHANG and YANG of the Liaoning Institute of Forestry and Pedology; CH'EN, SHAO and WANG of the Hangchow Botanical Garden

TITLE: "A Preliminary Study of Ballia obscurosignata Liu--An Important Natural Enemy of the Japanese Pine Bast Scale"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 279-289

TEXT OF ENGLISH ABSTRACT: The lady bird beetle Ballia obscurosignata Liu is an important natural enemy of the Japanese pine bast scale Matsucoccus matsumurae Kuw., and its capacity in suppressing the scale was recently demonstrated in the Hangchow district of Chekiang province. In Hangchow it has four generations each year and the time of its occurrence is well synchronized with that of the scale. It can build up stable populations in pine forests. The voracities of the adults

[continuation of K'UN-CH'UNG HSUEH-PAO No 3, Aug 78 pp 279-289]

and larvae were tested with the scales in different stages. They can multiply normally and have three generations in Liaoning province where the winter may be safely passed over above 0°C and with syrup as food. Therefore this insect can be used for controlling the pine scales in Chekiang and Liaoning provinces.

\* Help received from SUNG Pao-shan [1345 1405 1472] and LIN Chin-feng [2651 6930 2800], both of the Hsien-jen-tung Tree Farm, Chuang-ho Hsien, Liaoning; SHAO Yu-hua [6730 3768 5478] of the Forestry and Pedology Institute did the illustrations; and WANG K'ai-p'ing [3769 7030 1627] and LIN Chi-hui [2651 4949 1920] participated in some of the work.



AUTHOR: WU Ch'iu-yen [0702 4428 7159]  
HU Chao-yuan [5170 0664 0337]  
KUO Fu [6753 6744]

ORG: All of the Zoology Institute, Chinese Academy of Sciences

TITLE: "Effects of a Juvenile Hormone Analogue on Nucleic Acid Metabolism of the Posterior Silk Gland in Silkworm Bombyx mori L."

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 290-296

TEXT OF ENGLISH ABSTRACT: (1) J003 (1-(p-ethylphenoxy)-7-methoxy-3, 7-dimethyl-2-octene) stimulates RNA synthesis of the posterior silk gland cells.  
(2) During the fifth instar of the normal larvae, the DNA content of posterior silk gland cells gradually increases and different races of the silkworm show conspicuous differences in this respect.  
(3) J003 inhibits DNA synthesis in the posterior silk gland cells, and the degree of inhibition shows some relation to the increase of dosage used.  
(4) Our preliminary results give evidence showing the increase of silk protein secretion in the silk gland after treatment with J003 was due to the changing rate of the transcription during fibroin synthesis.

AUTHOR: CHU Hung-fu [2612 1738 1788]

ORG: Zoology Institute, Chinese Academy of Sciences

TITLE: "Strategies and Tactics of Pest Management with Special Reference to Chinese Cotton Insects"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 297-308

EXCERPT FROM ENGLISH ABSTRACT: Cotton is a fiber crop with great importance to human life and industry, having been cultivated in China for a little more than 700 years since it was introduced from foreign countries in the 13th century. At present there are five cotton cultivation areas scattered about 19-44°N latitude and 76-124°E longitude, i.e., the Yellow River basin cotton area, the Yangtze River basin cotton area, the South China cotton area, the Northwest inland cotton area and the Liao River basin area. Each cultivation area possesses its own climatic, soil, vegetative, ecosystematic and other characteristics which have been briefly described in the text. For a number of years the author and his colleagues have worked in several major cotton producing regions on the subject of cotton insects. Since cotton was exotic to China, how the insect pests immigrated into cotton fields is of utmost concern in studying Chinese cotton insects.

[continuation of K'UN-CH'UNG HSUEH-PAO No 3, Aug 78 pp 297-308]

The answer is given in this paper: The insect members of the primary community shifted into the secondary community, embracing the omnivorous insects and the oligophagous insects originally inhabiting the mallow family host plants indigenous in China. Meanwhile, a few exotic species immigrated from foreign countries.

AUTHOR: WEN T'ing-huan [3306 1694 2719]

ORG: Shanghai Medical College No 1

TITLE: "Abbreviations of Morphological Characters of the 'Shaman' or Sand Mites (Acariformes: Trombiculidae and Leeuwenhoeekiidae)"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 309-319

EXCERPT FROM ENGLISH ABSTRACT: After a historical review of the Chinese ancient medical literature and recent advances in trombiculid mites and scrub typhus, the writer stresses the name "shaman" or sand mite as being the most suitable term for the mites in Chinese. Furthermore, as far as the world literature is concerned, the earliest description of sand mite fever or scrub typhus was written by the ancient Chinese physician KE Hung [5514 3163] in the early part of the fourth century. Probably it can be regarded as the first and foremost arthropod-borne disease definitely proven and entered on the record since the beginning of history. Towards the end of the 19th century the name "tsutsugamushi disease" was used as a synonym for the fever by Japanese authors and later, with the extensive aggression against China by Japanese imperialism, the Chinese term was gradually discarded in the Japanese scientific literature. For the purpose of carrying forward the

[continuation of K'UN-CH'UNG HSUEH-PAO No 3, Aug 78 pp 309-319]

brilliant achievement of Chinese ancient medicine the terms sand mite and sand mite fever should be revived.

AUTHOR: CHANG Hsing-li [1728 5281 4409]  
WANG Chia-ch'un [3769 1367 4783]  
KAN T'ang-lu [3927 2768 6922]

ORG: All of the Department of Biology, Kansu Normal University

TITLE: "A Study on the Locusts of Lanchow and Its Vicinity with Description of a New Species of Pamphigidae (Orthoptera: Acridoidea)\*\*

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 320-324

EXCERPT FROM ENGLISH ABSTRACT: The present paper deals with the zoogeographical distribution of the locusts of Lanchow. The survey was carried out during 1964-1973 in Lanchow area and its adjacent regions and, adding to it the past records, a total of 34 species and subspecies were found, belonging to 16 genera and 3 families, of which 27 species and subspecies are new records for Lanchow, 16 new records for Kansu and 1 species is new to science.

\* The following helped with the study: HSIA K'ai-ling [1115 0418 7881] of the Shanghai Entomology Institute, Chinese Academy of Sciences; LIU Yu-lan [0491 3768 5695] of the Plant Taxonomy Laboratory, Kansu Normal University; CHENG Che-min [6774 0772 3046] of Shensi Normal University; CH'EN Ch'ing-ch'eng [7115 1987 6134]

[continuation of K'UN-CH'UNG HSUEH-PAD No 3, Aug 78 pp 320-324]

of Lanchow University; LI Hsueh-hsi [2621 1331 4406] of Kansu Normal University;  
and CHIANG Ch'u-yun [3068 2806 9462].

AUTHOR: HSIAD Ts'ai-yu [5618 6846 3842]  
CHENG Le-i [6774 2867 1837]

ORG: Both of Nank'ai University

TITLE: "Notes on Chinese Aelia Fabr. (Heteroptera: Pentatomidae)"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAD [ACTA ENTOMOLOGICA SINICA] in Chinese No 3,  
Aug 78 pp 325-328

EXCERPT FROM ENGLISH ABSTRACT: This paper deals with four species of Aelia Fabr.  
from China, of which one is new to science.

AUTHOR: FAN Tzu-te [5400 3320 1795]

ORG: Shanghai Institute of Entomology, Chinese Academy of Sciences

TITLE: "A New Fly of Genus Musca from Tibet, China (Diptera: Muscidae)\*\*

SOURCE: Peking K'UN-CH'UNG HSUEH-PAD [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 329-331

EXCERPT FROM ENGLISH ABSTRACT: Musca (Plaxemya) tibetana sp. nov.

The descriptions of the new species are based upon a unique male which was collected from Tibet, China in the year 1960. The type specimen is deposited in this Institute.

It resembles in haired parafacialia and densely haired eyes Musca (Setimusca) malaisei Emden, 1965, and Musca (Pseudosetimusca) santoshi Joseph et Parui, 1972, but can be distinguished from them easily.

\* Aid received from: CH'EN Chih [7115 2535], LIN Ai-lien [2651 1947 5571] and SUN Ts'ai-hung [1327 1752 5725].

AUTHOR: LI Kuei-chen [2621 6311 4176]

HSIEH Pao-ch'i [6043 1405 3823]

YANG Kuang-jung [2799 0342 2837]

ORG: LI of Kweiyang Medical College; HSIEH and YANG both of the Research Institute of Epidemiology of Yunnan

TITLE: "The First Record of the Genus Xenodaeria Jordan, 1932, from China with Description of a New Subspecies (Siphonaptera: Hystrichopsyllidae)\*\*

SOURCE: Peking K'UN-CH'UNG HSUEH-PAD [ACTA ENTOMOLOGICA SINICA] in Chinese No 3, Aug 78 pp 332-334

EXCERPT FROM ENGLISH ABSTRACT: The genus Xenodaeria Jordan, 1932, with its only species X. telios, was described based on a single male from Prionodon paradicolor near Sikkim. In July 1972, specimens of fleas collected from Pi-chiang, Yunnan province, off Mus famulus and Crocidura attenuata were identified as Xenodaeria telios Jordan, 1932. This is the first record of this genus in China.

Since there are certain morphological differences in the males between the Sikkim and the Pi-chiang specimens, we consider these two different subspecies: the former, X. telios telios Jordan, 1932, and the latter, X. t. bijiangensis subsp. nov.

[continuation of K'UN-CH'UNG HSUEH-PAO No 3, Aug 78 pp 332-334]

\* Help received from: WU Yu-hsing [2976 0147 5281], CHIEN Kuo-min [4675 0948 2404],  
T'AO K'ai-hui [7118 7030 2585] and YANG Hsiao-tung [2799 2556 2639].

AUTHOR: LIN Ch'i-pin [2651 0796 1755]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "On the Fossil Blattoidea of China"

SOURCE: Peking K'UN-CH'UNG HSUEH-PAO [ACTA ENTOMOLOGICA SINICA] in Chinese No 3,  
Aug 78 pp 335-342

EXCERPT FROM ENGLISH ABSTRACT: The present paper deals with 14 species belonging to 8 different genera of the fossil Blattoidea, among which 4 genera and 12 species are identified as new. As shown in Table 1, they occurred mostly in the Mesozoic rocks and only two species in the Upper Permian. The types of the new genus and new species are deposited in the Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences.

8650

CSO: 4009

LASER

AUTHORS: CHANG P'ei-lin [1728 1014 2651]  
YUAN Su-su [7086 5685 5685]  
CHANG Lien-fang [1728 6647 5364]

ORG: Ch'ing-hua University

TITLE: "Frequency Stabilization of a Dual Frequency Laser"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 1-8

ABSTRACT: This article discusses the problem of frequency stabilization of a dual frequency laser. Specifically, the single-mode operating conditions and the effect of magnetic field strength on the frequency stabilization points are discussed. A theoretical formula for computing the frequency difference which is derived based on the Lamb theory is presented. In addition, the problem of multiple frequency stabilization points caused by the Lamb dip phenomenon of the left and right circular polarizations is analyzed. It is shown that the experimental frequency repeatability of a dual frequency laser is better than  $4.4 \times 10^{-8}$  and that the long term (2 hour) frequency stability is better than  $2.5 \times 10^{-8}$ .

AUTHOR: None

ORG: Chinese Academy of Sciences, Shanghai Bureau of Optical Equipment

TITLE: "A Study of the Characteristics of an Electron Beam Controlled CO<sub>2</sub> Discharge Laser"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 8-13

ABSTRACT: Gas discharge using electron beam control is an effective method of achieving uniform discharge under high atmospheric pressure and large volume conditions. In this article, the discharge characteristics and output characteristics of an electron beam controlled 3.7 liter CO<sub>2</sub> discharge laser operating under 1 atmospheric pressure are discussed. The components of the experimental set-up which include the electron gun, the laser discharge chamber, the resonant cavity, and the power source are described. In addition, experimental results are presented to show that when the discharge energy density exceeds 400 joules/liter-bar, the output energy becomes saturated and that the maximum laser energy density is 68 joules/liter-bar.

AUTHOR: None

ORG: Szu-ch'uan University, Department of Physics

TITLE: "An Organic Dye Laser Using a Conventional Straight Xenon Lamp as Pumping Source"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 13-19

ABSTRACT: An experiment has been conducted to study the laser oscillation of organic dyes rhodamine B and rhodamine 6G dissolved in ethyl alcohol. The experiment uses a conventional straight xenon lamp and a conventional high voltage pulse condenser as the pumping source. This article describes the design considerations of the experiment and the actual experimental set-up. The basic elements which affect the laser output characteristics and laser efficiency are discussed, which include: 1) the quality and concentration of dye; 2) the content of oxygen molecules; 3) the type of solvent; 4) the stability of the solution; and 5) optimum output coupling conditions. In conclusion, it suggested that the laser efficiency can be further increased by improving the parameters of the xenon lamp, improving the existing experimental set-up, and by using better quality dyes.

AUTHORS: LI Hsiao-wei [2621 1321 0251]  
LI Mei-ying [2621 5019 5391]

ORG: Department of Metallurgy

TITLE: "Improvement of the Static Light Dispersion Ratio Meter"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 20-21

ABSTRACT: A helium-neon laser is often used as the light source for measuring the light dispersion ratio of a crystal. In order to eliminate the measurement errors caused by fluctuations in the source amplitudes, an optical compensation circuit is implemented in the measuring device. In this article, the basic principle of the compensation circuit and the method of tuning the circuit are described.



AUTHOR: None

ORG: Chinese Institute of Measurement Science

TITLE: "Establishment of a High Power Laser Measurement Standard"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 21-26

ABSTRACT: With the increasing number and power level of laser devices, the need for a standardized method of measuring the power output of a continuous laser has become essential. The water flow power meter is a widely used technique which indirectly measures the laser output by measuring the temperature rise of the cooling water and the corresponding flow rate. The basic components of the device consist of a receiving unit, a sensing element for measuring the temperature difference, a flow meter, and specially designed water pipes. Test results show that the measured power levels from the water flow power meter agree with those measured by a cavity type absolute radiometer to within  $\pm 2$  per cent; they are higher than those measured by a disc type medium power meter by 1.6 per cent. The error sources of a water flow power meter are two: 1) errors in the measured quantities; and 2) discrepancy between the power level calculated from the measured quantities and the actual laser power output.

AUTHOR: YIN Shu-pai [1438 2885 4102]

ORG: None

TITLE: "Automatic Compensation of the Reflection Phase Shift of a Metallic Film Optical Filter"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 26-30

ABSTRACT: This article discusses the direct method of controlling the thickness of an optical filter film during the manufacturing process. It is shown that this method is applicable not only to the dielectric film system, but also to the absorption film (metallic film) system. Experimental results are presented to show that by controlling the film thickness, the reflection phase shift between the metallic film and the dielectric film is automatically compensated, and the accuracy of determining the main peak wave length is improved.

AUTHOR: None

ORG: Chinese Academy of Sciences, Shanghai Bureau of Optical Equipment

TITLE: "Process Control and Measurement of Rotational Speed During the Growth of Crystals"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 30-33

ABSTRACT: In order to improve the optical characteristics of Nd: YAG, YAP crystals, it is necessary to control the rotational speed of the crystal during various stages of its growth process. To accomplish this function, a "rotational speed control and measurement instrument" has been developed by the Shanghai Bureau of Optical Equipment. The instrument uses a stepping motor for process control, and a speed regulating circuit with negative voltage feedback and positive current feedback to achieve speed stabilization. It also has a rotational speed measuring circuit for measuring the number of revolutions of the crystal and a photo-electric conversion device which converts the information for digital display.

AUTHOR: None

ORG: Shanghai Chemical Engineering College

TITLE: "Optical Fibre For Transmitting High Power Laser"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 34-37

ABSTRACT: This article introduces a new optical fibre cable with heat fused ends for conducting high power laser. This type of cable has a conducting surface which is approximately 90 per cent of the total cross sectional area and can tolerate a laser power density as high as several hundred to several thousand watts per square centimeter. The manufacturing procedure of the cable, and the properties of two glass materials, the LaK<sub>13</sub> and F<sub>626/356</sub>, which are used in the cable, are described. The optical performance of the cable and its feasibility to transmit Nd<sup>3+</sup>:YAG laser at a power level of several tens of watts are demonstrated.

AUTHOR: None

ORG: Chinese Academy of Sciences, Shanghai Bureau of Optical Equipment

TITLE: "Improvement of the Optical Uniformity of  $\text{Nd}^{3+}$  :YAP Crystal"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 37-43

ABSTRACT: Experimental results are presented to illustrate the improvement in the optical uniformity of  $\text{Nd}^{3+}$  :YAP crystal by eliminating the b-axis and c-axis crystal nuclei. The thermal field conditions for growing b-axis  $\text{Nd}^{3+}$  :YAP crystal are also introduced. In addition, specific results of growing crystals with conical boundaries, flat boundaries, and trapezoidal boundaries are presented.

AUTHOR: None

ORG: Chungking Bureau of Optical Equipment

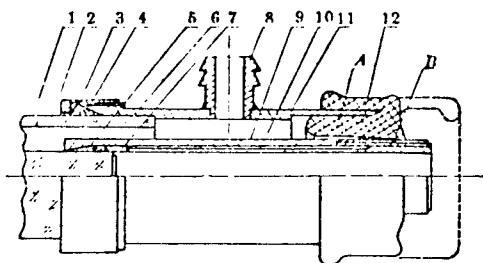
TITLE: "A Structure for Sealing and Packaging Laser Rod"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 44 and 19

ABSTRACT: This article introduces a structure for sealing and packaging the laser rod of a medium or low power solid laser, as shown in Fig. 1. The specific feature of this design is that it does not require adhesives, which facilitates the process of replacing the laser rod and the water cooling jacket. The procedure of assembling the structure is also described.

[Continuation of CHI KUANG No 3, Jun 78 pp 44 and 19]

Fig. 1



1. glass water tube; 2. laser rod; 3. pressure ring;
4. conical seal ring; 5. copper conical sleeve;
6. rubber ring; 7. pressure ring; 8. water nozzle;
9. rod sleeve; 10. top cylinder; 11. copper head of the
- water cooling jacket; 12. rubber plug.

AUTHOR: WANG Cheng-min [3076 2973 3046]

ORG: Chinese Academy of Sciences, An-huei Bureau of Optical Equipment

TITLE: "Special Features of the Optical Section of the AJG75-1 Laser Scale-less Topographic Instrument"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 45-49

ABSTRACT: The AJG75-1 laser scale-less topographic instrument is a device which uses a pulse laser for range measurement and a transit for angular measurement. In this article, the important technical parameters and the structure of the laser head are described. The technical problems of using a single lens structure and methods of improving the mechanical stability of the laser components are discussed. In addition, the effect of pulse leading edge on the precision of range measurement is also explained and the relation between range measurement error and the response time of silicon photo diodes is analyzed.

AUTHOR: None

ORG: Peking Machine Tool Institute, Peking Machines Tool Parts  
Factory

TITLE: "Application of Laser Automatic Correction System on a  
Wire Pole Milling Machine"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 49-53

ABSTRACT: The laser automatic correction system uses a helium-neon laser to measure the dynamic errors in the drive chain of a wire pole milling machine and performs automatic correction through a feedback circuit so that the errors are minimized during the milling process. This article discusses the basic principle and practical implementation of the laser measurement and automatic correction system on the SG7430 milling machine. It also addresses the following problems of utilizing laser on a precision machine tool: 1) the rationalization of decimal number representation of the laser wave length; 2) the problem of vibrational distortion; 3) the correction formula for laser wave length with respect to temperature and pressure; 4) methods of protecting laser components during milling operation; and 5) actual performance results of the laser automatic correction system on the SG7430 milling machine.

AUTHORS: LI Shou-chung [2621 1343 0022]  
LU Ta-chiung [0712 1129 3518]  
KAO Chien-kuo [7559 1696 0948]

ORG: Peking University, Geophysics Department; Chinese Academy of  
Sciences, Institute of Physics

TITLE: "Laser and Earthquake Prediction"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 53-54

ABSTRACT: Since the T'ang-shan earthquake of 28 July, 1976, a laser phase lock strainmeter has been installed in a cave near Peking to investigate the correlation between rock strain and earthquake. On the basis of a series of measurements and analyses, a certain correlation has been established between the sudden contraction or expansion of rocks and the occurrence of earthquakes. Satisfactory results have been obtained using this method to predict the times of occurrence of 20 earthquakes during the period from November 1976 to October 1977. More accurate predictions can be made if a double time coincidence method is used by combining the current indicator with other precursor indicators.

AUTHOR: CHANG Pin-lin [1728 0365 5259]

ORG: Cheng-chou University, Department of Physics

TITLE: "Wave guide CO<sub>2</sub> Laser"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 55-61 and 64

ABSTRACT: Wave guide gas laser has attracted much attention in recent years because of its wide gain bandwidth and its miniature size. In this article, the special features of a wave guide CO<sub>2</sub> laser are introduced. Specifically, the structures of a plexi-glass tube wave guide CO<sub>2</sub> laser, a BeO circular hole wave guide laser, a BeO square hole wave guide laser, a metallic square hole wave guide laser, a vertically excited pulse wave guide laser, and a horizontally excited pulse wave guide laser are described. In addition, the problems of wave guide coupling loss and absorption loss are also discussed.

AUTHOR: None

ORG: None

TITLE: "Brief Communications"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 pp 62-63

ABSTRACT: The following new developments in laser technology are introduced: 1) the QXJ-1 pulsed ruby laser holographic camera, which is developed by the An-huei Bureau of Optical Equipment; 2) two coolants used for the YAG repeated frequency laser which are developed by the No. 3 Mechanical Department; 3) a helium-neon laser with stable power output which was developed jointly by the Shanghai Glass Instrument No. 1 Factory and the Shanghai Institute of Laser Technology; 4) the treatment of inflammation of the front array gland using a helium-neon laser; and 5) the study of early diagnosis of cancer using the method of laser fluorescent display.

AUTHOR: None

ORG: None

TITLE: "Shantung Province Laser Alignment Technical Interchange Conference"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 p 63

ABSTRACT: From April 25-29 of this year, a laser alignment technical conference sponsored by the Shantung Province Laser Association took place in Ch'ing-tao city. The conference was attended by more than 70 representatives from 50 different organizations. The main topics discussed during the conference were applications of laser alignment techniques in various industries such as coal, electric power, architecture, ship building, textile, and machinery. In addition to technical discussions, demonstrations of laser alignment techniques were also presented by local factories.

AUTHOR: None

ORG: None

TITLE: "Laser Ranging Instrument Technical Interchange Conference"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 p 63

ABSTRACT: The first laser ranging instrument technical conference was held in Ch'eng-tu city from April 20-26, 1978. Over 130 representatives from 63 organizations participated in the conference and 45 technical papers were presented. The papers were primarily concerned with current research efforts in laser ranging techniques and problems in the construction of laser ranging instruments.

AUTHOR: None

ORG: None

TITLE: "Successful Development of the XJX-1 Laser Microscope"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78 p 64

ABSTRACT: The XJX-1 laser microscope is a multi-function laser device for studying the relation between cell structure and its functional abilities. Specifically, it has been used to study hereditary characteristics, seed cultivation, and the causes of malignant mitosis of cancer cells. The device was certified by the Jirin Municipal Committee on Science and Technology during a conference which took place from March 2 to 5, 1978. The conference delegates unanimously cited the Jirin Medical College and the Jirin Optical Equipment Laboratory for their contributions in developing the XJX-1 laser microscope.

AUTHOR: None

ORG: None

TITLE: "Photographic Illustrations"

SOURCE: Shanghai CHI KUANG [LASER] in Chinese No 3, Jun 78  
inside back cover and back cover

ABSTRACT: The inside back cover shows a photograph of the AJG75-1 laser scale-less topographic instrument, which is developed jointly by the An-huei Bureau of Optical Equipment, the Pang-p'u Radio No. 1 Factory, and the Ho-fei Industrial College. The back cover shows a photograph of the SG7430 wire pole milling machine which is equipped with a laser automatic correction system to minimize machining errors during the milling operation.



MICROBIOLOGY

AUTHORS: WANG Shu-fang [3769 3219 5364]  
WANG Ch'eng-fu [3769 2052 4395]

ORG: Both of Institute of Pharmacology, Chinese Academy of Medical  
Science, Peking

TITLE: "Tissue Isolation of Polyporus umbellatus (Pers.) Fr. Sclerotium  
and Solid Culture of Pure Strains"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 1-3

ABSTRACT: To provide a basis for the artificial cultivation of  
Polyporus umbellatus (Pers.) Fr. to meet the acute supply of the popular  
traditional Chinese diuretic herbs from wild resources, the optimal  
conditions for the tissue isolation of its sclerotium and the solid  
culture of its pure strains are studied and determined. The research has  
been conducted since 1974. The characteristics of the morphology of the  
colonies, the changes of color, the temperature of growth, and the  
occurrence of calcium oxalate crystals are also described.

[Continuation of WEI-SHENG-WU-HSUEH T'UNG-PAO No 4, Aug 78 pp 1-3]

The authors express thanks to Prof. Yu Ta-fu [0205 1129 4811] of the  
Northern China Agricultural University for directing the research, and  
to Liu Hsi-chin [0491 6932 3871] and Ch'en Ch'ing-t'ao [7115 1987 3447]  
of the Institute of Microbiology of the Chinese Academy of Sciences  
for assistance in strain identification.

AUTHOR: None

ORG: Rice-Wheat Combinative Symbiotic Nitrogen Fixation Research Group,  
Microbiology Laboratory, Fukien Agricultural College

TITLE: "A Study on the Combinative Symbiotic Nitrogen Fixation of Rice  
and Wheat Root System"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 3-5

ABSTRACT: A preliminary study on the nitrogen fixation activity of the  
root systems of a series of wheat and rice varieties shows that nitrogen  
fixation activity does exist over the surface of two wheat varieties,  
and three rice varieties, that nodule bacteria medium is most suitable  
to isolate bacteria strains from the roots of rice and wheat, and that  
the 3106 strains isolated from the root system of rice can possibly  
develop combinative symbiotic nitrogen fixation with certain rice  
varieties. The nitrogen fixation activity was determined with the  
assistance of the Gas Chromatography Section of the Foochow Measurement  
Testing Laboratory.

AUTHORS: T'U Kuei-hung [3205 2710 3163]  
CHANG Mu-yen [1728 2606 3508]  
CH'EN Yai-yai [7115 1509 1509]  
HU Hsiao-ying [5170 1420 3853]

ORG: All of Canton Foodstuffs Plant

TITLE: "New Bacteria Strains for Deep Layer Molasses Fermentation of  
Citric Acid Without Need of Yellow Prussiate of Potash"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 6-7

ABSTRACT: A new mutant strain, G20-5, was reportedly selectively cultured  
from repeated , alternative ultra-violet rays and diethyl sulfate  
induction of *Aspergillus niger*, and has proved to be able to ferment  
molasses into citric acid without the need of adding yellow prussiate  
of potash or any other acid-forming accelerants. The acid formed can  
generally be stabilized at 7-8%, but can be as high as 9.4%. The  
citric acid content in terms of fermentation liquor is 90%. The  
average fermentation cycle is around 100 hours.

AUTHOR: None

ORG: Dissolved Oxygen Research Group, Antibiotics Specialty, Shanghai Chemical Engineering College

TITLE: "Observation on Dissolved Oxygen Variation in Glutamic Acid Fermentation"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 pp 7-9

ABSTRACT: In coordination with the Third Wu-hsi Pharmaceutical Plant and the Chiang-yin Hung-hsing Fermentation Plant, determination was made on the variation of dissolved oxygen against the yield of glutamic acid from more than 40 tank fermentation batches under various conditions. It is observed that the critical dissolved oxygen value is 2-3%, that the variation of the dissolved oxygen curves reflect the respiratory metabolism of microorganisms, and that in any attempt to improve the yield of glutamic acid, equipment and production technique, the relationship between the concentration of dissolved oxygen and the other parameters should first be considered.

AUTHOR: None

ORG: Sewage Microorganism Research Group, Institute of Microbiology, Chinese Academy of Sciences (Peking)

TITLE: "Pseudomonas sp No 5207 Strains on the Decomposition of Inorganic Cyanides and Acrylonitrile"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No4, Aug 78 pp 10-12

ABSTRACT: Of the more than 70 strains of microorganisms isolated from the mud of cyanide-containing sewage, Pseudomonas sp No 5207 was identified and found to possess a higher capability of decomposing inorganic cyanides and acrylonitrile, while acrylonitrile was also found to be a unique source of carbon and nitrogen for the strain's growth. The optimal concentration of acrylonitrile was between 100-200 milligram per liter. It was found also that the best source of nitrogen for the microorganism was in the order of mannitol and glucose, and the best source of carbon was in the order of asparagine, peptone and acrylonitrile.

AUTHOR: None

ORG: Type B Meningitis Vaccine Immunity Joint Research Team of Peking Institute of Biological Preparations and Heilungkiang Institute of Veterinary Medicine

TITLE: "Horse Immunity Antigen Reaction to Type B Meningitis Vaccine"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 pp 12-13

ABSTRACT: Neutral and complementary tests of antigen reactions among young colts immunized with inactivated and attenuated living type B meningitis vaccines provided by the Peking Institute of Biological Preparations shows that neutral tests are more sensitive than complementary test, that the positive rate of serum antibody of inactivated vaccine is higher than that of the attenuated vaccine, and that from the standpoint of neutral index range, the antibody strength can maintain as long as four months, while the positive rate of complementary combined antibodies drop almost monthly.

AUTHOR: CH'EN Fang-jung [7115 2455 2837]

ORG: Kan-chow Kiangsi Kan-nan Medical School

TITLE: "Observation on Antibacterial Experiments of 143 Traditional Chinese Herbal Medicine"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 pp 14-16

ABSTRACT: A study on the antibacterial action of 143 traditional Chinese herbal medicine on Staphylococcus aureus, type B Streptococcus haemolyticus, Pneumococcus, Bacillus dysenteriae, Bacillus coli, Samonella chloerasuis, Bacillus typhi and Bacillus pyocyaneus by the perforation and test tube methods confirms that 91 of them, mostly antiphlogistics, exhibit varying degrees of antibacterial action, and are strongest against such Gram-positive bacteria as Staphylococcus aureus, and weakest against such Gram-negative bacteria as Bacillus coli. The antibacterial concentrations are mostly 1:32 - 1:64. Boiled-water and alcohol preparations also exhibit different degrees of effectiveness.

AUTHORS: HSING NIEN-I [6717 1819 5030]  
LIU Yun-ch'ing [0491 6663 0615]  
CHIA Chin-ch'iu [6328 6855 4428]

ORG: All of Chinese People's Liberation Army's Tsinan Millitary Region's  
Institute of Military Medicine

TITLE: "Sensitivity of Bacillus dysenteriae to Traditional Chinese  
Herbal Medicine"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 16-17

ABSTRACT: A study on the sensitivity of the sensitive strain ( $S^S$ ), the  
resistant strain ( $S^R$ ) and the dependent strain ( $S^d$ ) of Shigella pfaffii  
3A Shiga's bacillus to 102 species of traditional Chinese herbal medicine  
confirms the existence of marked differences in the sensitivity of the  
three mutant strains to all the herbal medicine. Among the herbs,  
Nepal Sonchus oleraceous L. is found to possess a high degree of  
bacteriostasis against the three  $S^S$ ,  $S^R$  and  $S^d$  strains of Shigella pfaffii,  
the local strains of Shigella sonnei, as well as the standard strain  
of these two species of bacteria. The importance of controlling the  
pH in the experiment is also stressed.

AUTHOR: T'ANG Kuo-min [0781 0948 2404]

ORG: Institute of Microbiology, Chinese Academy of Sciences (Peking)

TITLE: "Determination of Glucoamylase Activity by Glucose Oxidase"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 33-34

ABSTRACT: A colorimetric determination of glucose content for fermen-  
taion industries is proposed based on the oxidation of  $\beta$ -glucose by  
glucoamylase to form gluconic acid and hydrogen peroxide, when the  
later product in turn oxidizes, under the catalysis of peroxidase,  
such substances as p-dimethoxyaniline, p-dimethylaniline, phenolphthalien,  
potassium ferrocyanide, etc. from the colorless or white forms into  
their respective colored forms. The glucose concentrated in the  
enzyme reaction liquor must be diluted to within the range of 0-90  
microgram per liter to obtain accurate results.

AUTHOR: None

ORG: Bacteria Preservation Research Laboratory, Heilungkiang Institute of Applied Microbiology (Harbin)

TITLE: "A New Method of Preserving Basidiomycelium"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 p 35

ABSTRACT: A method for the preservation of Basidiomycelium is proposed on the basis of the biological characteristics that basidiomycetes forms spherical mycelium granules under a shaking liquid medium. Experiments of the method in the preservation of 31 strains of basidiomycetes belonging to 17 genera and 20 species for 22 months shows that all but one species of *Ganoderma japonicum* and one species of *Gloeophyllum saepiarium* survives. Longer period of preservation remains to be observed. The method is claimed to be simple in equipment and operation, and is suitable for preserving large quantity of basidiomycetes strains.

AUTHOR: YANG Shou-chun [2799 1108 6874]

ORG: Institute of Microbiology, Chinese Academy of Sciences (Peking)

TITLE: "Thin-Layer Chromatography"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 pp 36-41

ABSTRACT: The author introduces the principles and techniques of thin-layer chromatography that include: 1) the selection of absorbing agent and expanding agent in adsorption thin-layer chromatography; 2) distribution thin-layer chromatography; 3) ion-exchange thin-layer chromatography; 4) thin-layer gelatin filtering; and 5) the techniques of preparing thin films, drop sampling, expansion, color development, and quantitative analysis in thin-layer chromatography.

AUTHOR: YAO Shih-hua [1202 0013 5478]

ORG: Shanghai 59th High School

TITLE: "Grainless Culture of 'Flat Mushroom'"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 45

ABSTRACT: A new culture medium for the culture of "flat mushrooms" is reportedly successfully developed and used, where the usual addition of such grain as brans or fine rice husks to wood dust is replaced by 0.4% calcium carbonate, 0.4% urea, 0.2% potassium dihydrogen phosphate, 0.05% magnesium sulfate, 0.05% potassium permanganate, and 1% glucose, all in terms of wood dust, and controlled at pH6. While saving the grains for other purposes, the yield is approximately the same.

AUTHOR: None

ORG: Kiangsu Nan-t'ung Biochemical Pharmaceutical Plant

TITLE: "γ-Tyrosine Produced by Enzyme Fermentation"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 pp 45-46

ABSTRACT: To replace the former chemical synthesis of γ-tyrosine, the Nan-t'ung Biochemical Pharmaceutical Plant has reportedly successfully developed a new enzyme fermentation process, where the fermentation liquor of *Bacillus coli*, glutamic acid and decarboxylase at pH4 is being fermented to produce γ-tyrosine, and finally separated. The yield can be as high as 30-40%. The new process is simpler and more economical.

AUTHOR: None

ORG: Chekiang Chin-hua District Agriculture Investment Company

TITLE: "Determination of the Stimulation of '5406' Bacterial Agent"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 45

ABSTRACT: To determine the most effective stimulation of the "5406" bacterial agent for crops, the article suggests the following, namely:  
1) selection of varieties with high sprouting rate, strong activity and fast growth; 2) selection of bean sprouts that have grown to at least 3 cm long; and 3) adjust the soaking time according to the kind of crops, normally between 14 to 24 hours.

AUTHOR: CHANG Wei-min [1728 4850 3046]

ORG: Honan Loyang Forestry Pharmaceutical Plant's Third Workshop

TITLE: "Bacillus thuringiensis Fermented from Bean Cake Powder Instead of Corn Syrup"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 45

ABSTRACT: To cope with the shortage and higher cost of corn syrup supply, bean cake powder is reportedly used as a replacement in the production of Bacillus thuringiensis preparations by fermentation. The bean cake powder must first be hydrolyzed with 3% industrial grade hydrochloric acid. The replacement is claimed to have attained stable fermentation, higher yield, and lower cost of production, with quality equal to those prepared from corn syrup. Preliminary application of the newer preparations against looper caterpillars and bamboo caterpillars over Honan's Hsin-cheng and Szechwan's Ch'ang-ning districts has proved to be more than 90% effective.



AUTHOR: MENG Kuang-chen [1322 1684 7201]

ORG: This Journal

TITLE: "Nationwide Immobilized Enzyme Symposium Convened at Kwangtung"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 46

ABSTRACT: Under the sponsorship of the Institute of Biochemistry and the Institute of Microbiology of the Chinese Academy of Sciences, a nationwide Immobilized Enzyme Symposium was convened at Kwangtung's Hsin-hui on 5-11 May 1978, and attended by more than 130 representatives from over 70 units throughout the country. Besides reading of 34 research papers and reviews, heated discussions on the preparation, properties and applications of immobilized enzymes, a plan for future research was also devised.

AUTHOR: CHIANG An-sheng [5592 1344 3932]

ORG: Shantung Tsinan Brewery

TITLE: "A Session to Appraise AS 1.398 Proteinase Liquid Preparations Convened at Tsinan"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 46

ABSTRACT: A session to appraise the AS 1.398 Proteinase Liquid Preparations, sponsored by the Shantung Provincial First Light Industry Bureau and the Tsinan First Light Industry Bureau, was convened at Tsinan on 14-16 April 1978, and attended by representatives from more than 20 concerned units throughout the country. The session heard reports delivered by the Tsinan Brewery and the Tsinan Institute of Light Industry concerned with the successful development and technology of the new type of enzyme preparation, the AS 1.398 Proteinase Liquid Preparation, heard the experiences of some of the units that have used it, toured its processing lines and equipment, and discussed the prospect of producing and applying it in other localities.

AUTHOR: None

ORG: Hydrocarbon Metabolism Research Section and Fermentation Workshop  
of Institute of Microbiology, Chinese Academy of Sciences

TITLE: "Excellent U<sub>3-21</sub> Strains Produced Long-chained Dicarboxylic  
Acid from Normal Alkanes Fermentation"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 46

ABSTRACT: The U<sub>3-21</sub> mutant strains derived from the induction of *Candida tropicalis* 1230 by nitroguanidine and ultra-violet rays, is reportedly found to be able to convert C<sub>10</sub>-C<sub>14</sub> of normal alkane mixture into a variety of long chain dicarboxylic acid. The purity of the dicarboxylic acid so obtained is 92-98%.

AUTHOR: LIU Chung-sheng [0491 0112 0581]

ORG: Honan Hsin-cheng County Meng-chuang Biological Pharmaceutical Plant

TITLE: "Effective Bacterial Control of Date Loop Caterpillars"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese  
No 4, Aug 78 p 47

ABSTRACT: The author reports how the production and provision of *Bacillus* Siberian pine caterpillar pesticides by the Meng-chuang Biological Pharmaceutical Plant to replace the more costly and hazardous DDT and 666, has effectively controlled the epidemic of date loop caterpillars in the area. The process involves fermentation of such farm byproducts as wheat brans, millet husks, rice shells and river mud in solid deep tank fermentation with crude ventilation, washing and filtering facilities. The daily output has gradually raised from the few hundred kan in 1973 to the present one ton.

AUTHOR: HSIEH Yen-sen [6200 0917 2773]

ORG: Heilungkiang Sui-hua County Hsin-sheng Commune Biological Pesticide Plant

TITLE: "Benefits of Biological Pesticide Plants"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 pp 47, 13

ABSTRACT: The author advocates the benefit of biological pesticides and establishing of plants to produce them by citing their plant's production of more than one and a half million kan of "5406", and more than 10,000 kan of muscardine in 1977, that has drastically reduced the density of insects from 23% in 1975 to 2-3% in 1977. Besides, "5406" also promotes earlier ripe and higher yield, as well as prevents vegetables from frost injury and yellow wilt disease. The use of fertile soil, insect bodies, brans and sewage as raw materials also saves foodstuffs and greatly reduced the cost of production. From 1977 to 1978, many new biological pesticides have also been experimented, put into production and used.

AUTHOR: CHENG Ju-yung [6774 0320 3057]

ORG: None

TITLE: "Introducing the Book Entitled 'A Collection of Chinese Fungus'"

SOURCE: Peking WEI-SHENG-WU-HSUEH T'UNG-PAO [MICROBIOLOGY] in Chinese No 4, Aug 78 p 48

ABSTRACT: The book entitled "A Collection of Chinese Fungus" introduced was written by the well-known Chinese mycologist Tai Fang-lan [2071 5364 3482], who passed away in 1973, just prior to his completion of the initial manuscripts. Compiled from 772 investigative and research reports concerned with the taxonomy and resources of Chinese fungus with about 7,000 fungus taxonomical units and more than 3,800 host taxonomical units, the book is divided into four parts, namely: 1) fungus names arranged in the order of Latin alphabets, as well as their hosts, habits, distribution and sources of references; 2) origin of reference materials and their abstracts; 3) synopsis of Chinese and English names; and 4) index of Chinese fungus and hosts names. The book is to be published very soon.

11,206

CSO: 4009

OCEANOLOGIA ET LIMNOLOGIA SINICA

AUTHOR: KUAN Ping-hsien [4619 4426 6343]

ORG: Institute of Oceanology, Chinese Academy of Sciences

TITLE: "The Warm Current in the South China Sea--A Current Flowing Against the Wind in Winter in the Open Sea Off Kwangtung Province"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 117-127

EXCERPT FROM ENGLISH ABSTRACT: All the literature to date dealing with the surface current system and circulation in the northern sector of the South China Sea has indicated without exception that the directions of the currents or the flow patterns in winter followed those of the prevailing NE monsoon.

Through an analytical study of the CSK data obtained by R/V "Cape St. Mary" of the Fisheries Research Station, Hong Kong and "Ryofu Maru" of the Meteorological Agency, Japan, during the winter periods for the years 1966-1968, a narrow, strong and band-like northeastward current was discovered on the geostrophic-current field to the south of the Tropic of Cancer, ca. 19-22°N. It is known as the Warm Current in the South China Sea, or briefly, the Nan Hai Warm Current.

AUTHOR: YUAN Yeh-li [5913 2814 4539]

ORG: Institute of Oceanology, Chinese Academy of Sciences

TITLE: "A Combined Model for the Resonance-Coupling of Normal Pressure and Shearing Force and the Dissipation by Eddy Viscosity"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 128-140

TEXT OF ENGLISH ABSTRACT: A resolution of three-dimensional linear equations of the viscosity flow into the potential part and viscosity part is made in the first section.

From this an evolutionary equation of the amplitude spectrum for the wave surface is derived. The solution of this equation in the interval of wind-wave spectrum shows that in the initial stage of the wind-generated wave the two-dimensional wave-number spectrum grows according to linear-exponential law. The exponential growth rate of our model is the sum of the coupling energy absorption rates caused by normal pressure and shearing force and the dissipation rate by eddy viscosity. Then Miles' result (1962) is modified in our work.

[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 128-140]

\* Help was received from MAO Han-li [3029 3352 4409], KAN Tzu-chun [3927 1311 0971], HSU Ch'in [6079 4440] and CHANG Ch'ing-hua [1728 1987 5478].

AUTHOR: CH' IEN Wan-ying [3383 3834 5391]  
CHOU Chia-i [0719 1367 5030]  
TS'UI Chun-chih [1508 0193 5347]  
WANG Ming-piao [3769 2494 1753]  
HUANG Min-fen [7806 2404 5358]

ORG: All of the Department of Oceanological Chemistry, Shantung College of Oceanology

TITLE: "Cold Vapor Atomic Absorption Determination of Mercury at Sub-PPB Levels in Seawater and Natural Waters"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 141-150

EXCERPT FROM ENGLISH ABSTRACT: A rapid and extremely sensitive method for the direct determination of mercury concentrations as low as 5 ppt in waters is described.

The cell volume (ca. 133 ml) being much larger than that of the normal apparatus is one of the characteristics of Model 590 Mercury Vapor Measuring Apparatus. In order to increase and fully utilize the high sensitivity of this apparatus and to lower its detection limit, improvements have been achieved by selecting the

[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 141-150]

optimized plug (the volume of carrier gas which contains mercury is denoted by the plug) cell volume ratio and therefore getting the plug completely into the cell to form a most concentrated mercury plug, and by taking measures to minimize the noise. The optimized measuring parameters, such as flow rate, medium effect, reductant amount, shake and equilibrium time, have also been investigated. Calibration curve can be made by using a 10% NaCl solution instead of sea water free from mercury.

\*Thanks to Professor HO Ch'ung-pen [6378 1504 2609].

AUTHOR: CHANG Cheng-pin [1728 2973 2430]  
LIU Lien-sheng [0491 5571 3932]

ORG: Both of the Department of Oceanological Chemistry, Shantung College of Oceanology

TITLE: "A Study of the Theory of the Liquid-Solid Distribution of Elements in Sea Water--The Theory of Distribution Equilibrium of Minor Elements on Hydrous Oxides in Sea Water"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 151-167

TEXT OF ENGLISH ABSTRACT: This article made a study of the theory of distribution equilibrium of minor elements on hydrous metal oxide in sea water, as well as of their calculating equations. As a result we found that: (1) When using Freundlich's formula in expressing the value of  $b$  in smaller systems, at present there is still no good calculating equation for expressing the law of their liquid-solid distribution. On the basis of the theory of step-wise equilibrium of inorganic ion exchange, we extended the condition of positive integer  $n = 0, 1, 2, \dots, N$ , etc., in our previous article to  $0 \leq n < 1$ , thus obtaining calculating equation (15). The result is satisfactory, as testified by calculations using experimental

[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 151-167]

data. Consequently, this article is the continuation and development of our previous article; (2) Quantitative relationship also exists between the theory of step-wise equilibrium and Sips' absorption equation. Sips' equation and equation (15) are entirely similar in form; (3) The experimental data of several systems have been calculated by means of equation (15) and curve fitting method. The result is that theory and experiment well coincide within the whole range of concentration. Finally, availing ourselves of the theory established in this article, we discussed the reasons for the deviations occurring in the literature regarding these systems.

The theory established in this article is also applicable to the general aqueous solution systems similar to those discussed in this article.

AUTHOR: WU Yu-tuan [0702 3842 4551]

ORG: Department of Oceanography, Hsia-men University

TITLE: "On the Mechanisms of the Harmful Heavy Metal Transport in Yangtze Estuary. I. The Transport Pattern and the Factors Affecting It"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 168-182

TEXT OF ENGLISH ABSTRACT: In recent years, the content of heavy metal in the Yangtze River estuarine water was fundamentally unvaried, whereas there was an increase in the amount of sediments.

We consider that the estuarine sediments are composed of various phases of water soluble, ion-exchangeable, acid soluble and crystalline solid. From the distribution ratio of heavy metal in each phase, we found that the main transporting process of the Hg, Cr, Cu dissolved in Yangtze estuarine water was caused by the adsorption of inorganic and organic colloidal substances, not by the ion exchange.

Further quantitative study is now in progress.

[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 168-182]

\* Also participating were: CH'EN Yu-wang [7115 0060 2598], TS'AI A-ken [5591 7093 2704], CHOU Tz'u-yu [0719 1964 3945], LIU Yung-ch'ing [0491 3938 3237], NI Yuan-k'un [0242 3293 6924], CH'EN Wan-ch'ing [7115 1238 0615], LIEN Chin-ming [6647 6930 2494], WANG Hung-sheng [3769 3163 3932] and LIU Ling-fa [0491 0109 4099].

AUTHOR: CHANG Hung-ts'ai [1728 1347 2088]  
HUANG Ch'ing-fu [7806 1987 4395]  
CHAO Sung-ling [6392 2646 7881]  
TS'ANG Shu-ch'i [5547 2885 3305]

ORG: All of the Institute of Oceanology, Chinese Academy of Sciences

TITLE: "Paleomagnetic Study of Two Sediment Cores from the Northern Coastal Region of China"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 183-193

TEXT OF ENGLISH ABSTRACT: This paper presents the results of a paleomagnetic study of two sediment cores from Cang-13, Hopei province, and H-70, Kiangsu province. The Cang-13 core is about 600 meters in length, from which a total of 136 samples were measured. The H-70 core is 72.9 meters in length, from which a total of 89 samples were measured. The results of paleomagnetic measurements may be correlated with the geomagnetic polarity reversal scales of Cox (1969) back to about 4.5 million years ago.

The results of measurement of the Cang-13 core show that there are five short geomagnetic field reversals in the Brunhes normal polarity epoch. The age range



[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 183-193]

of the Brunhes is 0.69 m.y. (B.P.), the depth range is between 0-239 m. The age range of the Matuyama reversal polarity epoch is 0.69-2.43 m.y., the depth range is 239-366 m. The Gauss normal polarity epoch is 2.43-3.42 m.y., depth range is 366-463 m. The Gilbert reversal polarity epoch is 3.45-4.25 m.y., depth range is 463-571 m.

The results of measurements of the H-70 core show that the depth range of the Brunhes normal polarity epoch is 0-27 m, of the Matuyama reversal polarity epoch 27-45 m, of the Gauss normal polarity epoch 45-54 m, and of the Gilbert reversal polarity epoch it is 54-72.9 m.

AUTHOR: CHANG Chun-fu [1728 1498 3940]  
HSIA Pang-mei [1115 6721 5019]

ORG: Both of the Institute of Oceanology, Chinese Academy of Sciences

TITLE: "A New Species of Gastroclonium from the Paracel Islands, Kwangtung Province, China"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 209-214

EXCERPT FROM ENGLISH ABSTRACT: The genus Gastroclonium was established by Kutzing in 1843. It differs from other members of the family Lomentariaceae in the possession of a solid stalk and the development of large carpospores attached to the periphery of a large fusion cell in the center of the cystocarp. Hollenberg (1940) erected a new genus, Coeloseira, based on the material collected from southern California, U.S.A. According to Hollenberg, this genus is distinguished from Gastroclonium by the formation of 12-16 polyspores instead of tetraspores in the sporangia. Furthermore, the vegetative structure is very similar to some species of Gastroclonium.

AUTHOR: WU Pao-ling [0702 1405 6875]  
SUN Jui-p'ing [1327 3843 1627]

ORG: Both of the Institute of Oceanology, Chinese Academy of Sciences

TITLE: "Preliminary Studies on Geographical Distribution and Evolution of Pelagic Polychaetes from South China Sea Islands (Kwangtung Province, China)"\*

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 215-223

EXCERPT FROM ENGLISH ABSTRACT: 1. The paper presents the results of a study of the geographical distribution and evolution of pelagic polychaetes collected from the South China Sea islands.

2. So far, about 26 species of pelagic polychaetes have been reported from the South China Sea islands, from the Hsi-sha Islands 21 species, 11 from the Chung-sha Islands and 8 from the Nan-sha Islands.

\* The following also aided in the present study: FANG Tsung-hsi [2455 1350 3356], HUANG Shih-mei [7806 0013 3780] and YANG Te-che [2799 1795 3181], all of the Shantung College of Oceanology; TSENG Ch'eng-k'uei [2582 0701 1145], TSOU Ching-chung [6760 2529 1813] and HSIAO I-ch'ang [5135 6318 2490], all of the Institute of Oceanology, Chinese Academy of Sciences.

AUTHOR: LI Kang [2621 0474]  
LIU Ch'eng-sung [0491 2110 2646]

ORG: Both of the South China Sea Institute of Oceanology, Chinese Academy of Sciences

TITLE: "Studies on the Chemical and Physical Characteristics of the Primary Cement of Barnacle, Balanus reticulatus"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 224-229

TEXT OF ENGLISH ABSTRACT: The chemical composition of the primary cement of Balanus reticulatus Utinomi has been analyzed. The organic constituents are almost all proteins (95.61%). Ash is high, up to 26.90%, which is made up largely of SiO<sub>2</sub>. Among the trace elements, the contents of Zn and U are notable.

The electron microscopy reveals the fact that the primary cement is of lamellate structure. It suggests that the secretion and extrusion of the primary cement are discontinuous processes. Based on the results of electron microscopic studies, the mechanism of cement secretion is discussed.

AUTHOR: SHAO Ping-hsu [6730 3521 4872]

ORG: Department of Biology, Fudan University

TITLE: "The Seasonal Change of the Thyroid Gland of Trachidermus fasciatus in Relation to the Seaward Migration"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 230-235

EXCERPT FROM ENGLISH ABSTRACT: The thyroid gland of Trachidermus fasciatus, as in most of the teleosts, is chiefly distributed along the anterior part of the ventral aorta and the origin of the first three afferent arteries. The epithelial height of the follicles is considered as an index of the thyroid activity of the fish. The thyroid activity is low in June and July, when the epithelial cells of the follicles are squamous and cuboidal, measuring on the average  $4.9 - 7.6\mu$  in height. The thyroid activity gradually increases from August to middle November, with some of the epithelial cells growing columnar in shape, while the measurement averages  $9.3 - 17.9\mu$ . The thyroid activity becomes extremely heightened from late November to March of the next year.

\* Also participating were: YEH Han-chang [5509 3352 4545], NEI Chu-sheng [5360 5468 3932], CH'EN Hai-ming [7115 3189 2494] and FU Wen-yu [0102 2429 3842].

AUTHOR: YEN Shu-chen [7051 3219 3791]

ORG: Department of Biology, Shantung University

TITLE: "Primary Observation on the Ovulation and Egg-Capsule Formation of Skates"

SOURCE: Peking HAI-YANG YU HU-CHAO [OCEANOLOGIA ET LIMNOLOGIA SINICA] in Chinese No 2, Jul 78 pp 236-240

EXCERPT FROM ENGLISH ABSTRACT: In this paper, ovulation and egg capsule formation of skates (Raja porosa Günther) were reported. About 600 female skates, caught in the vicinity of Tsingtao and Shih-tao island in May to August, were observed. Mature skates had a pair of reproductive ducts, consisting of three portions: the oviduct, the shell gland and the uterus. Fresh mature ovum is of pinkish color, about 1.6 cm in diameter. It is of extreme telolecithal type with abundant yolk. The white spot-like germinal disc can be clearly seen in the ovarian egg before maturation. It marks the animal pole. Fertilization takes place internally at the anterior portion of the oviduct. Three layers of egg envelop are present: the primary egg membrane, the vitelline membrane, the semi-fluid egg albumine, secreted by the oviduct, and the dark brown horny capsule, formed by the shell gland.

[continuation of HAI-YANG YU HU-CHAO No 2, Jul 78 pp 236-240]

\* Thanks to T'UNG Ti-chou [4547 4574 0719] and YEH Yu-fen [5509 3022 5358] of the Zoological Institute, Chinese Academy of Sciences; WU Shang-ch'in [0702 1424 2014] of the Institute of Oceanology; and LI Chia-yung [2621 0857 6102] of the Shantung College of Oceanology.

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CSO: 4009

ACTA PALAEONTOLOGICA SINICA

AUTHOR: CHIN Yu-kan [6855 3768 3771]  
HU Shih-chung [5170 0013 1813]

ORG: CHIN of the Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences; HU of the Geological Institute of East China

TITLE: "Brachiopods of the Ku-feng Formation in South Anhwei and Nanking Hills"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Jun 78 pp 101-130

EXCERPTS FROM ENGLISH ABSTRACT: The term Ku-feng Formation has been generally applied to a series of siliceous shales occurring below the Lung-t'an Coal Series and above the Ch'i-hsia Limestone. This formation is widely exposed not only in Anhwei and Nanking Hills of Kiangsu province, but also at several localities of Kwangsi and Hunan.

The brachiopod fauna of the Ku-feng Formation is dominated by the Strophomenoides, both in number of species and in individuals. The Dalmanelloides and Spiriferids occur rarely, but none of Rhynchonelloid, Terebratuloid and Athyrid appear in the fauna.

[continuation of KU-SHENG-WU HSUEH-PAO No 2, Jun 78 pp 101-130]

The collection here studied comprises 21 genera and 27 species, including 5 new genera and 7 new species, and proposes 3 new sub-families.

AUTHOR: FANG Chin-t'ien [2455 6651 3240]  
HSU Mao-yu [1776 5399 6877]

ORG: Both of the Institute of Geological Prospecting, Ministry of Coal Industry

TITLE: "Upper Triassic Ostracods of Hunan, Kiangsi and Northern Kwangtung"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2,  
Jun 78 pp 131-150

EXCERPT FROM ENGLISH ABSTRACT: The ostracods described in the present paper were collected respectively from the Upper Triassic An-yuan Formation of Eastern Hunan, Western Kiangsi and from the Hung-wei-k'eng Member and the Niu-ku-tun Member of Northern Kwangtung. They comprise 23 species in 5 different genera, namely Darwinula, Oncocythere, Gomphocythere, Miniocythere and Triassinella, including 2 new genera and 20 new species. But the other three known species, Darwinula praecipua Zheng, Gomphocythere? subovata Zheng, Oncocythere subelliptica (Zheng), were found from the Hsu-chia-ho Formation of Szechwan, commonly considered as belonging to Upper Triassic Series.

The An-yuan Formation in Hunan and Kiangsi is measured about 745 to 1769 meters in thickness. According to the ostracod fauna and lithological features, it may be divided into three divisions in ascending order: the Tzu-chia-ch'ung Member, the San-chia-ch'ung Member and the San-ch'iu-tien Member.

AUTHOR: WANG I-kang [3769 5030 0474]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "Latest Early Triassic Ammonoids of Tzu-yun, Kweichow--With Notes on the Relationship Between Early and Middle Triassic Ammonoids"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2,  
Jun 78 pp 151-179

EXCERPT FROM ENGLISH ABSTRACT: The ammonoids described in this paper were collected in 1963 by the writer from a bed of limestone (0.1-0.2 m) at the uppermost part of Lower Triassic in Hsin-yuan of Tzu-yun, Kweichow province.

This fauna consists of 27 species belonging to 17 genera, among which 4 genera and 17 species are new.

AUTHOR: CHANG Lu-chin [1728 3873 3866]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "Mesozoic Spores and Pollen Grains from the Volcanic Clastic Sedimentary Rocks in Chekiang, with Their Stratigraphic Significance"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Jun 78 pp 180-194

EXCERPT FROM ENGLISH ABSTRACT: More than 40 species assigned to 26 genera of spores and pollen grains are discovered from the Mesozoic volcanic clastic sedimentary rocks in Chekiang. Sixteen species are here described, including 11 new species.

AUTHOR: WANG Li-hsin [3769 4539 2450]  
HSIEH Chih-min [6043 1807 3046]  
WANG Tzu-ch'iang [3769 5261 1730]

ORG: WANG Li-hsin and HSIEH both of the Regional Geological Survey Team of Shansi; WANG Tzu-ch'iang of the North China Institute of Geological Science

TITLE: "On the Occurrence of Pleuromeia from the Ch'in-shui Basin in Shansi Province"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Jun 78 pp 195-212

EXCERPT FROM ENGLISH ABSTRACT: The specimens described in this paper were collected at Hung-yen-t'ou in the Yu-she district and at Shang-chuang in the P'ing-yao district of Shansi province. From Hung-yen-t'ou the following fossil plants have been found: Pleuromeia sternbergi (Muenster), Pl. rossica Neuberg, Yuccites? sp., Voltzia sp. (male cone), Neocalamites sp. and Equisetites sp., while those from Shang-chuang are: Pleuromeia sternbergi (Muenster), cf. Anomopteris mouteoti Schimper, Samaropsis sp. and Neocalamites sp.

AUTHOR: WANG Chih-hao [3769 1807 3185]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "Permian-Lower Triassic Conodonts of the Liang-shan Area, Southern Shensi"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Jun 78 pp 213-229

EXCERPTS FROM ENGLISH ABSTRACT: The conodonts described in the present paper contain 12 genera and 20 species, including 6 new species and 5 indeterminate species.

It is worthy of notice that Anchignathodus typicalis proposed by Sweet (1970) as an indicator of the first conodont zone in Triassic, has been found in Lower Permian Mao-k'ou Formation of this area, or at lower horizon as in the Lower Permian Ch'iehchia Formation of Szechwan. Hence the above-mentioned species probably ranges in age from early Permian to early Triassic.

AUTHOR: TENG Lung-hua [6772 7893 5478]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "On a New Species of Early Carboniferous Lepidodendron of Tibet"

SOURCE: Peking KU-SHENG-WU HSUEH-PAO [ACTA PALAEONTOLOGICA SINICA] in Chinese No 2, Jun 78 pp 230-232

TEXT OF ENGLISH ABSTRACT: This paper describes Lepidodendron machalaensis sp. nov. from the early Carboniferous Machala formation in the Riwoqe [Lei-wu-ch'i] county of Tibet. Noticeably, the present new species bears a pair of parichnos strands, which is made known first in China. In this paper it is suggested that the type specimen described as Sublepidodendron changduensis Gu et Zhi seems to be the tiges or stems of Lepidodendron mazhalaensis in its juvenescent phase.

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CSO: 4009



ACTA PEDOLOGICA SINICA

AUTHOR: YAO Hsien-liang [1202 6343 5328]  
CHAO Wei-sheng [6392 3262 3932]  
YU Te-fen [0060 1795 5358]  
HSU Hsiu-yun [6079 4836 0061]

ORG: All of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Preliminary Investigation of Structural Characteristics of Fertile Paddy Soils"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 1-12

EXCERPT FROM ENGLISH ABSTRACT: This article deals with the structural characteristics of the fertile paddy soils in the southern region of Kiangsu province. Preliminary experiments show that the bulk density of the arable soil layer in wheat planting season attains  $< 1.20 \text{ gm}\cdot\text{cm}^{-3}$ , total soil porosity  $< 55\%$  (V), non-capillary porosity  $> 5\%$  (V), compressive strength of air-dry soil clods  $26\text{--}30 \text{ kg}\cdot\text{cm}^{-2}$ .

The correlation between the compressive strength of soil clods and the quantity of

[continuation of T'U-JANG HSUEH-PAO No 1, Aug 78 pp 1-12]

the clay particles ( $< 0.001 \text{ mm}$ ) on the one hand and the physical clay particles on the other is significantly positive, while the quantity of non-capillary porosity is negative. The correlation between the compressive strength and quantity of organic matter and total porosity of soils is nonsignificant.

AUTHOR: PAO Hsueh-ming [0202 1331 2494]  
YU T'ien-jen [0060 1131 0088]

ORG: Both of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Studies on Oxidation Reduction Processes in Paddy Soils. VIII. Characterization of the Water Soluble Ferrous Iron"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1,  
Aug 78 pp 13-22

EXCERPT FROM ENGLISH ABSTRACT: For the purpose of characterizing the water soluble ferrous iron in paddy soils, the iron was determined as metal ions and those complexed by organic matter separately. A certain amount of  $\alpha$ - $\alpha'$  dipyridyl solution was added to the water extract, and the color intensity was measured at different time intervals. Maximum color intensity was usually obtained after 48 hours. The amount of iron corresponding to the respective color intensity was plotted against the logarithm of time in seconds, and the extrapolated intersection at zero time was taken as the metal ions. The amount of complexed iron was calculated as the difference between the amounts of total ferrous iron and that of metal ions.

AUTHOR: LO Ju-ying [5012 3067 5391]

ORG: Nanking Technical Institute of Forest Products

TITLE: "Relation of Geological and Geomorphological Factors to Forest Soils in Kiangsu"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1,  
Aug 78 pp 23-31

EXCERPT FROM ENGLISH ABSTRACT: The influence of geological and geomorphological factors on the nature, properties, classification and distribution of forest soils and on tree growth in the low mountain and hill regions of Kiangsu is discussed. Some great soil groups, such as the fossil red earth (paleudult), the claypan soil (planosol), the skeletal soil (lithosol), the dark basic soil (relating to andosol), the rendzina and the vadose soil, were tentatively classified in accordance with the differences in structural features of rocks, geomorphological types, properties of rocks and the Quarternary deposits, which reflected on soil profiles.

AUTHOR: SU Te-ch'ang [5685 1795 2512]

ORG: None

TITLE: "Moisture Regime of Planosol (A Bleached Soil) and Its Adjustments"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 32-38

TEXT OF ENGLISH ABSTRACT: Precipitation is known as the main source of water for the planosol (a bleached soil). According to the nature of the soil moisture regime, the annual moisture cycle of the planosol may be divided into two periods, i.e. the frozen period and the crop growth period at summer and autumn. These two periods can be also subdivided into five phases. The former period involves two phases: the freezing and thawing of the soil, while the latter period contains three phases: lower moisture in early summer, an excess of soil water in mid-summer and a humid soil condition in late autumn.

In the course of these five phases, a drought between two waterloggings is a common occurrence. In agricultural production, it is necessary to make some appropriate adjustments in accordance with the rule of the changes in soil moisture, that is, for example, to properly adjust the soil moisture, especially in winter and spring,

[continuation of T'U-JANG HSUEH-PAO No 1, Aug 78 pp 32-38]

to prevent the evaporation of water in early summer, and to drain surplus water in summer and autumn. With these adjustments such natural adversities as drought and waterlogging can be checked and a promising harvest assured.

AUTHOR: T'ANG Shu-ying [0781 3219 5391]  
CHANG Li-chun [1728 7787 0689]

ORG: Both of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Effect of the Development of Cultured Horizon on the Movement of Soil Water and Soluble Salts of the Saline Soils in Coastal Area, Northern Kiangsu"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 39-52

TEXT OF ENGLISH ABSTRACT: Field observations and plot experiments revealed that a well-developed plowed layer promoted the rate of desalinization of soils during the rainy season owing to its good permeability, while at the dry season it facilitated the rate of evaporation of soil moisture and formed a dry mulch of a few cm thick. The mulch reduced the rise of ground water from subsoil horizons and consequently kept the soil in a desalinized condition for a longer period. In a well cultivated soil, the annual rate of desalinization attained was 30-50% within 1 meter in soil profile.

An effective cultured horizon for reclamation of saline soil should contain: >1.5% organic matter, >25% water stable aggregates (>0.25 mm in diameter), a volume

continuation of T'U-JANG HSUEH-PAO No 1, Aug 78 pp 39-52

weight of <1.25 g/cm<sup>3</sup>, and total porosity >55%, of which more than 15% is non-capillary pores. The horizon should have a thickness of more than 15 cm.

\* LI Tung-shun [2621 0392 7311] took part.

AUTHOR: SHIH Shu-lien [2457 2579 5571]  
CH'ENG Li-li [4453 0536 0536]  
LIN Hsin-hsiung [2651 1800 7160]  
SHU Chung-li [2631 0022 4539]  
WEN Ch'i-hsiao [2429 0796 1321]

ORG: All of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Effect of Azolla on the Fertility of Paddy Soils"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1,  
Aug 78 pp 53-60

TEXT OF ENGLISH ABSTRACT: Azolla is a common green manure used in paddy soils in eastern and southern China. Its effect on the growth of rice plants and the physical properties of soil was studied both in field experiments and pot culture. Results revealed that the contribution of available nitrogen from Azolla was lower than that of milk vetch, but rather than that of compost.

Azolla as a green manure, however, accumulated more organic matter in soils than did the milk vetch, and consequently manifested a more favorable effect on the improvement of the physical properties of soil in well drained conditions. Through

[continuation of T'U-JANG HSUEH-PAO No 1, Aug 78 pp 53-60]

two years observation, it was found that the rate of decomposition of Azolla in soils was comparatively slower than that of milk vetch and rice straw. But Azolla, as well as other manures, gave no effects on the improvement of permeability in poorly drained paddy soils.

AUTHOR: CHANG Hsiao-p'u [1728 2400 2883]  
TU Ch'eng-lin [2629 2110 2651]  
MA Mao-t'ung [7456 5399 2717]  
CH'EN Chi-hsing [7115 7139 0992]  
CHIA I [6328 5030]  
HSIEH Chien-ch'ang [6200 1696 2490]

ORG: All of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "The Supply of Soil Potassium and the Effect of Potassium Fertilizer on Crop Response in Kiangsu Province"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 61-74

EXCERPT FROM ENGLISH ABSTRACT: The potassium contents of various soils in Kiangsu differ greatly. Analysis of more than 700 representative soil samples selected from different parts of the province showed that the contents of available K (1 N  $\text{NH}_4\text{OAc}$  extractable) in soils ranged 4.8-32.0 mg  $\text{K}_2\text{O}/100$  g soil, slowly available K (soluble in boiling 1 N  $\text{HNO}_3$ ) 20.9-145.1 mg  $\text{K}_2\text{O}/100$  g soil, and the total  $\text{K}_2\text{O}$  1.41-2.67% (for detailed information refer to table 1 in the Chinese text). It was found that the parent materials and their degree of weathering, and soil

[continuation of T'U-JANG HSUEH-PAO No 1, Aug 78 pp 61-74]

texture have caused such differences.

The corn plants grown in a greenhouse indicated that the amount of potassium taken up by the plants in different soils was closely correlated to the level of initial available soil K ( $r = 0.94$ ).

AUTHOR: CH'EN Jung-yeh [7115 2837 2814]  
FAN Ch'in-chen [5400 2953 2823]

ORG: Both of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Effect of Deep Application of Prilled Ammonium Bicarbonate Fertilizer on the Nitrogen Supplying Status of Non-Calcareous Paddy Soils"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 75-82

EXCERPT FROM ENGLISH ABSTRACT: Ammonium bicarbonate, still being one of the main nitrogen fertilizers at present in China, is easily volatilizable in soils. Various field experiments as well as practices have repeatedly shown that, if prilled and applied beneath the soil surface about 6 cm, its effect on the growth of crops will be markedly increased. In order to get some idea about the mechanism involved in its beneficial effect, the present study was undertaken. Experiments were carried out in pots under greenhouse conditions as well as in the paddy field using N<sup>15</sup>-tracer technique.

AUTHOR: FU Chih-p'ing [0265 2663 1627]  
CHANG Ching-sen [1728 2417 2773]

ORG: Both of the Nanking Institute of Soil Science, Chinese Academy of Sciences

TITLE: "Effect of Green Manure on the Properties of Colloidal Complexes of Clayey Warp Soil"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1, Aug 78 pp 83-92

EXCERPT FROM ENGLISH ABSTRACT: It is generally known that in order to make stiff clay gradually become chessom, we can make use of green manure to bring into practice the reclamation of physico-chemical properties of soil, the decrease of bulk density and resistance to compression of soil, and the increase of porosity, moisture capacity and aggregation of soil. In addition, application of green manure evidently accumulates some additional organic matter and nitrogen contained in the soil.

AUTHOR: YANG Chin-lou [2799 6855 2869]  
CHU Chi-ch'eng [2612 3444 2052]  
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ORG: All of the Institute of Soils, Fertilizers and Plant Protection, Shanghai  
Academy of Agricultural Science

TITLE: "The Drainage Problem of the Soils in the Suburbs of Shanghai"

SOURCE: Peking T'U-JANG HSUEH-PAO [ACTA PEDOLOGICA SINICA] in Chinese No 1,  
Aug 78 pp 93-100

TEXT OF ENGLISH ABSTRACT: The present paper deals mainly with the drainage problem of the soils in the suburbs of Shanghai. The soils are mostly used under a rotation system of wheat (hull-less barley)-rice annually. Excess content of soil moisture usually restricts the growth and yield of winter crops. Various ameliorative measures for the improvement of drainage conditions of soils are described.

\* Also participating were: SHIH Nan-ch'ang [2457 0589 2490], T'UNG Yu-wei [4547 2589 3634], CH'ENG P'ing-hung [4453 1627 1347] and CHIANG Hsiao-hsien [5592 4607 0103].

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SCIENTIFIC EXPERIMENT

AUTHOR: CH'EN Hou-yun [7115 0624 0061]

ORG: Institute of Computing Technology, Chinese Academy of Sciences

TITLE: "Electronic Computers and the Four Modernizations"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 78 pp 1-4

ABSTRACT: As Chou En-lai pointed out, computers can play an important role in raising the level of automation technology. This article discusses the ways in which computer technology can be helpful in the four modernizations. In technological modernization computers can be used in complex calculations, simulations, and modeling in astronomy, astrophysics, and space and in the basic sciences as well as in information and bibliographic sciences. In industry computers can be used in the design, manufacture and inspection of products as well as in their transportation and management control. In national defense, computers can be used in weapons testing, control of military craft and in defense and early warning systems. And finally, computers can be used in agriculture for control of resources, machine and equipment design, water conservancy and the manufacture of fertilizers.

AUTHOR: CHANG Wei [1728 0251]

ORG: None

TITLE: "Giant Electronic Computers"

SOURCE: PEKING K'O-HSUEH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 78 pp 3-6

ABSTRACT: The nature of a country's computers is frequently used as an index of that country's degree of advancement. This is because in highly advanced areas only a super computer can handle the complex computations required of space travel, high energy physics, genetic engineering and early warning defense systems. These areas require a giant computer. The concept of giant changes with time and technical advances, but generally refers to a computer which can perform more than 50 million operations per second. This article discusses the characteristics of the giant computer and some of the problems entailed in increasing the speed of a computer's operations, such as matching memory retrieval to computation speed, keeping size limited to reduce computer mass and thus circuit length and the creation of system software which normally lags behind developments in hardware. The article also discusses the idea of the "light computer" and fourth and fifth generation computers.

AUTHOR: None

ORG: Third Laboratory, Institute of Physics, Chinese Academy of Sciences

TITLE: "A New Holographic Recording Material--Photoconductive Thermoplastics"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 p 7

ABSTRACT: Holographic photography has been developing very rapidly since laser was invented early in the 1960's and has had important applications in industries as well as in scientific research. Normally, a silver halide film is used as the recording material and in order to prevent the film from being exposed to light, a hologram must be taken in total darkness. Due to the requirement of a precise location for the film, it cannot be kept in a dark box like the film of ordinary photography. These restrictions greatly limit the application of the holographic technique. After more than a decade of studies, a new and more ideal material has been found. This is a new type of photoconductive thermoplastic material, designed and manufactured in China, made from a transparent thermoplastic resin, such as glycerin hydride colophonic ester, etc. A photosensitive semiconductor is used as the photoconductive body, and the recording is accomplished through a static electricity photographic technique. Chemicals are not needed to develop the film. Using a electric pulse heating technique, it only takes a little more than ten seconds to obtain a hologram. The composition of this new material and its advantage over the silver halide materials are briefly told.

AUTHOR: SHIH Ch'ing-lin [2457 1987 7792]

ORG: Second Laboratory, Shanghai Institute of Silicates, Chinese Academy of Sciences

TITLE: "New Technique of Automated Typesetting--Chinese Character Data Processing"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 10-12

ABSTRACT: This paper describes a newly created Chinese character data processing system, which is composed of the four parts of an electronic digital computer, a Chinese character input device, a Chinese character generator, and a Chinese character output device. The Chinese character generator is the heart of the system. It is also called Chinese character storage. Two types, the digital type and the analog type are currently in use. The digital type has Chinese characters stored in binary addresses. Ordinary character generator uses 32 x 32 numbers to designate one character, a precise generator uses 100 x 100 numbers. In order to store 4,000 to 8,000 common Chinese characters, a very large storage capacity is needed. A new type of storage using laser holograms has now been introduced. On a small dot less than 1 mm in diameter, one or several clear Chinese characters may be recorded. On a hologram of 100 x 100 mm, several tens of thousands of characters may be placed. This new technique, and the processes of input and output the Chinese character data through the computer with the aid of laser are briefly described.

AUTHOR: CH'EN Jui-min [7115 3843 6900]  
LI Wen-yu [2621 2429 5940]

ORG: Both of Shanghai Institute of Cytobiology, Chinese Academy of Sciences

TITLE: "Can Cancer Cells be Rehabilitated?"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 14-15

ABSTRACT: In so far as some plant and animal cancer cells have been observed to transform reversely into normal cells, malignancy appears to be the result of malfunction of genetic expression, instead of a genetic mutation which changes the DNA structure. Based upon this theory, messenger RNA was extracted from the liver of normal person for in vitro culture of human liver cancer cells (BEL-7404 system). The cancer cells recovered the ability to synthesize protein. Due to the fact that normal human liver cell does not have agglutinating reaction to French bean [*Canavalia ensiformis*] agglutinin, it was used to test the recovery of the cancer cell membrane. Obviously weakened reaction to the bean agglutinin was observed after the cancer cell was treated with the mRNA only once. After 3 generations of culture of these cancer cells for 20 days, the changed characteristic remained stable. The authors suggest that just like segments of virus genes can turn normal cells into cancer cells, perhaps the structure or function of a few key cancer cell genes may be corrected in the future, and the dreaded disease of cancer may one day be overcome by men.

AUTHOR: YANG Kuo-ch'ing [2799 0948 3237]

ORG: Shanghai Institute of Silicates, Chinese Academy of Sciences

TITLE: "Inorganic Pyrolitic Paint"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 18-19

ABSTRACT: When metals are in contact with a high temperature medium, corrosion will occur. With a coating of organic resin based pyrolitic paint oxidation can be prevented up to a temperature of no higher than six or seven hundred degrees. Several inorganic pyrolitic coating materials have now been created in China and in foreign countries. For protecting steel from oxidation, this new type of material can withstand up to 1,300°C. When it is used as an insulation in rocket technology, it can withstand, momentarily a temperature as high as 2000°C or higher. Several years ago, the Inner Mongolian Bureau of Science and Technology organized a demonstration. An inorganic pyrolitic paint was sprayed onto a Mongolian tent (Meng-ku Pao) before it was set on fire. After the flames died down, the tent was as good as new. The composition and characteristics of this type of inorganic pyrolitic paint are generally described.

AUTHOR: MAO T'ien-hsiang [3029 1131 4382]

ORG: Institute of Mechanics, Chinese Academy of Sciences

TITLE: "Modern Fiber Reinforced Complex Materials"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 16-17

ABSTRACT: It is well known that fibers are stronger than block materials. Observed under electron microscope of high magnitude, profile of bamboo appears to be very similar to that of fiber reinforced aluminum (microscopic photos of both are included.) Bamboo and kelp are fiber reinforced complex materials existing in nature. The structure of kelp is similar to that of boron-epoxy plates. Inspired by such natural materials, men have made various artificially complexed fiber reinforced materials, including fiberglass reinforced epoxy resin (commonly called glass steel,) carbon fiber or boron fiber reinforced epoxy resin, and metal based complex materials. The composition, the manufacturing procedure, and the applications of these materials are briefly described.

AUTHOR: KUANG I [0342 5669]

ORG: None

TITLE: "Optical Plastics"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 22-23

ABSTRACT: Optical plastics are a type of transparent non-crystalline organic high polymers. It has a visible light penetration of 92 percent, and 50 percent penetration for infrared and ultraviolet rays. There are different types of optical plastics. Some may be heated to become a liquid which can be formed through the injection technique without machining. Others can be melted with a catalytic agent only, and casting and machining are required to produce the desired shapes. Compared with optical glass, the optical plastics have many advantages, including good transparency, light weight, and low cost, but they are more moisture absorbent and less abrasion resistant. They are especially good for making nonspherical lenses.

AUTHOR: CHANG Li-cheng [1728 4539 2398]

ORG: None

TITLE: "Oceans and Resources"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
July 78 pp 26-27

ABSTRACT: Of the total surface of the earth, oceans amount to 71 percent while lands only 29 percent. At present, the one hundred plus elements discovered on land are predicted to be all contained in sea water. In fact close to 80 have already been discovered in sea water. Aside from petroleum and natural gas, the ocean floor is also extensively distributed with a soft mud which is rich in copper, lead, zinc, silver, and gold. This soft mud, in parts, is as thick as 600 m. Biological resources of the sea, from algae, fishes, birds, to mammals are all extremely useful to men. Besides, tides of the ocean are a gigantic energy resource. In China, some electrical power plants using tides to generate electricity have been built along the coast during the past decade. Sea water, of course, also contains deuterium, which is the necessary fuel for thermonuclear fusion, although men have not yet been able to utilize this form of energy.

AUTHOR: None

ORG: None

TITLE: "Victory Reports on the Science and Technology Front"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 28-29

ABSTRACT: Six items are presented: (1) New type boron-containing catalytic alloy: A product of Shenyang Colored Metal Processing Plant, not containing costly metals such as chromium, cobalt, or niobium. It is of low cost, and produces black-colored diamond of high compression and thermal properties. (2) Automated astronomical vacuum camera: It was made by Nanking Astronomical Instrument Plant of Chinese Academy of Sciences, in cooperation with Shanghai Observatory, Peking Observatory, Tientsin Latitude Station, etc., and installed in Tientsin Latitude Station of Peking Observatory in August 1976. There are only a dozen or so of these all over the world. (3) Solar energy welding machine: It was successfully made by Hai-an County Institute of Solar Energy, Kiangsu Province with the help of Hai-an Machinery Plant. It can replace oxygen electrical welding and is especially useful for medium and small machinery plants of remote regions where the supply of oxygen is difficult. (4) Automated fluid press and mold making machine: Tientsin Municipal Forging and Compression Machine Plant and Chi-nan Institute of Casting and Forging Machines, assisted by Shenyang Automobile Plant, designed and successfully made in 1976 this first automated mold making machine, capable of making molds and shaping parts and

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plates of steel, aluminum, copper, stainless steel, and titanium alloy steel of a thickness of 3.5 mm. (5) Electrically fused magnesium sand brick: It is a highly pure, high density, high temperature, alkali refractory material, designed and made by Ying-k'o County Institute of Electrically Fused Magnesium Brick Plant in a high temperature tunnel kiln of 21.m in length and 1750-1800°C normal temperature. (6) Portable black and white magnetic-tape video recorder: The state-operated Three-two-nine Plant successfully made the prototype in 1975. Following experimental tests by related departments, small scale production began in 1976.

AUTHOR: WANG Sheng-p'ei [3769 5116 1014]

ORG: Institute of Semiconductors, Chinese Academy of Sciences

TITLE: "A Smart Late Comer in Semiconductor Components--Charge Coupled Device (CCD)"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 78 pp 34-35

ABSTRACT: Charge coupled device (CCD) is a new semiconductor device created in 1970. Due to its superior adaptability and advantages, it has already been broadly adopted in electronic industry, in aviation, navigation, space industry, medicine, meteorology, and commerce, and the prospect of its application is still growing. The major structure of CCD, its work theory, and reasons for its being specially useful in photography, data processing, and memory storage are explained. The paper also includes a description of a television camera utilizing CCD. This television camera is as small as a small pocket camera.

AUTHOR: CHIANG Hung-yao [5592 1347 5069]

ORG: Institute of Geophysics, Chinese Academy of Sciences

TITLE: "New Advancement in Geophysical Prospecting"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 pp 36-38

ABSTRACT: Based upon different theories of physics used, geophysical prospecting is divided into magnetic, gravity, electrical, seismic, and radiation prospecting techniques. From the 17th Century to the beginning of the 20th Century the magnetic and the natural electrical field techniques had their beginnings. Since the early 20th Century, the seismic, the artificial electrical field, and the radiation techniques of prospecting were invented one by one. In the 1950's, the discoveries of computers and the rapid development of aviation brought new advancement to prospecting. Aerial magnetic surveying is much faster and accurate, and the various techniques are being used in combination to produce faster and less costly results. At present, geophysical prospecting techniques are developing in the quantitative direction. It is hoped that in the not very distant future techniques may be developed to record "total information" of a given area below the earth's surface as if an x-ray picture had been taken.

AUTHOR: None

ORG: None

TITLE: "Scientific Research Marches Toward Production-Construction Front to Provide Advanced Equipment for Rapid Development of National Economy"

SOURCE: Peking K'O-HSUEH SHIH-YEN [SCIENTIFIC EXPERIMENT] in Chinese No 7,  
Jul 78 inside front and back covers

ABSTRACT: Eight photos are presented on inside front and back covers of this issue. From left to right, they are: (1) Research scientists observing globu-erythromycin (a new antifungal drug) producing microbials; (2) CH'I Ching-t'ai [7871 2529 1132] of Ch'ang-ch'eng Resistor Plant of T'ien-shui, Kansu Province and WU Fang [0702 2455] of Institute of Mathematics, Chinese Academy of Sciences and colleagues discussing a new steel plate cutting technique which they created using mathematics; (3) A new microwave system for testing moisture saturation of petroleum strata successfully created by Microwave Communication Teaching and Research Group of Shanghai University of Science and Technology; (4) Photoconductive thermoplastic holography successfully created by members of Laser Laboratory, Institute of Physics, and those of Institute of Chemistry, Chinese Academy of Sciences to provide the condition for industrial application of holographic technology; (5) Super-compression high temperature equipment created by Shanghai Second Forging and Compression Equipment Plant and Shanghai Institute of Silicates

[continuation of K'O-HSUEH SHIH-YEN No 7, 1978 inside front and back covers]

to provide the condition of manufacturing synthetic diamond in China; (6) A moving electronic track scale accurately measuring the weight of each car of a train in motion and displaying the weight on a typewriter, a successful creation of Wuhan Scale Plant and related organizations; (7) The new 1 m all fluid pressure shovels, made by Shanghai Construction Machinery Plant undergoing final factory inspection; (8) An image processor successfully made by Shanghai Automated Instrument Plant in cooperation with more than forty organization all over the country. When it is connected to a multi-purpose electronic computer it can convert numerical data into figures or change figures into numerical data. It can complete the drafting work in half an hour what a draftsman would spend two to three months to do.

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